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Application Number	10/767,190
Filing Date	January 30, 2004
First Named Inventor	William SETTER
Art Unit	3721
Examiner Name	N. C. Chukwurah

Total Number of Pages in This Submission		Attorney Docket Number	119508.0102

ENCLOSURES *(Check all that apply)*

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- [ ] After Allowance Communication to TC
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	BLANK ROME LLP
Signature	*[signature]*
Printed name	Tara L. Laster
Date	March 28, 2008
Reg. No.	46,510

In re Application of	:	PATENT
	:	
William SETTER et al.	:	Confirmation No. 4584
	:	
Serial No.: 10/767,190	:	Docket No. 119508-00102
	:	
Filed: January 30, 2004	:	Customer No. 27557
	:	
For: SYSTEM AND METHOD FOR	:	Art Unit: 3721
CONTROLLING AN IMPACT TOOL	:	
	:	Examiner: N. C. Chukwurah

REPLY BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sirs:

Appellants respectfully submit this Reply Brief to answer the Response to Argument set forth in the Examiner's Answer mailed February 1, 2008.

I   Appellants' Disclosure Supports "A Set of Mathematical Expressions"

The Examiner argues for the first time that Appellants have not shown "a set of mathematical expressions," as recited in independent claim 1. Pg 8, ln 21 of Examiner's Answer. Initially, Appellants note that argument to the sufficiency of Appellants' disclosure is appropriate for a §112 rejection which Appellants have not received. And this new argument by the Examiner does not negate the fact that "a set of mathematical expressions" is recited in the claimed invention and is not found in the prior art. Nonetheless, Appellants note that support for

"a set of mathematical expressions" is found in Appellants' disclosure. In particular, Appellants' disclosure clearly teaches that one equation from a multitude of possible equations is selected based on analysis of the incoming torque pulse data. For example, page 11, ln 1 thru page 14- ln 14 of the Appellants' specification describes a preferred embodiment in which the least squares method (also known as regression analysis) is used to determine the proper coefficients, which are then in turn used in a linear expression, i.e., an equation is derived that "fits" the incoming data.

A coefficient is a constituent element of an equation, and because the coefficient is not known until it is calculated, the final equation similarly cannot be known. That is two equations that have different coefficients but are otherwise the same are properly considered to be two different equations. In contrast, Giardino et al. assumes that all threaded joints are essentially the same, and therefore does not consider the need for a coefficient, or an alternative equation, in determining tightness.

Other embodiments of the present invention, such as disclosed on page 14, ln 15 thru page 15, ln 2 teach (i) the use of artificial intelligence to select a mathematical expression and (ii) programming several linear and non-linear expressions that the incoming data are applied to until an expression is found that determines the torque value.

Accordingly, Appellants submit that Appellants' disclosure provides support for the recitation of "a set of mathematical expressions" and that such is not found in the prior art including Giardino et al.

II Examiner's Conclusory Statement That Giardino et al. Is Capable Of Meeting The Claimed Invention Is Unsupported

Throughout the Examiner's Answer, the Examiner relies only on the capability of Giardino et al. without pointing to specific description or teachings in Giardino et al. to specially show how Giardino et al. is capable of meeting the claimed invention. On page 9, first paragraph of the Examiner's Answer, the Examiner again makes the conclusory statement that "Giardino et al. have shown an equation chosen from a set of mathematical expression that satisfies a torque pulse." Referring to the Examiner's §102(b) rejection, the Examiner merely states that "Giardino et al's method for determining the torque applied to a fastener is capable of having more preprogrammed set of mathematical torque expressions in addition to torque equation" without support. See page 3, last paragraph of the Examiner's Answer.

The Examiner's attempts to show that needed support are misplaced. For example, in the second paragraph of page 9 of the Examiner's Answer, the Examiner asserts that the processor of Giardino et al. has the ability to account for any fastener tightness variation on the basis that the method accounts for fluctuations of force over time. The fluctuation of force over time, however is but one of many possible sources of variation of fastener tightness. Therefore consideration of just the fluctuation of force over time does not meet the criterion of accounting for any variation.

In the last paragraph of page 9 of the Examiner's Answer, the Examiner again states without foundation that the processor of Giardino et al. is capable of selecting one mathematical expression from multiple expressions. In that same paragraph the Examiner states that "[t]he same principle of calculating torque pulse applies to a threaded joint of any kind." This statement is simply incorrect. A number of factors, not the least of which is variable frictional

coefficients between the mating threads, contribute to variations between a measured torque value and actual thread tightness. And as argued on page 9 of Appellants' Appeal Brief, because Giardino et al. assumes that all of the information required to determine torque rests within one equation, $T=d(Ir)/dt$, Giardino et al. cannot account for a unique threaded joint. In contrast, the claimed invention accounts for variations in threaded fastening operations, and fits, or adjusts, the equations accordingly.

The Examiner repeats the unfounded assertion in the first paragraph of page 10 of the Examiner's Answer that in Giardino et al. two equations are selected. As argued in detail in Appellants' Appeal Brief (page 8), the impulse and angular momentum equations of Giardino et al. do not provide a set of mathematical expressions. Importantly, the apparatus of Giardino et al. will always use the same two equations for impulse and torque, respectively, regardless of how many tightening cycles are completed or how much variability there is from one threaded joint to the next.

Also, in the second paragraph of page 10 of the Examiner's Answer, the Examiner states that Giardino et al. shows the derivation of a torque pulse expression. This statement is also incorrect. The expressions of Giardino et al. are programmed into the processor and are fixed. Applying data to those expressions and arriving at an answer is not the same as deriving an equation.

In the fourth paragraph on page 10 of the Examiner's Answer, the Examiner states that Giardino et al. discloses "a processor of an electronics control (50) for processing data input and capable of making a decision with respect to the information provided." Although that statement is correct, it is irrelevant to the question of whether Giardino et al. selects an equation

from a set of equations because the decision is based on the solution to the equations that are

"hard wired" into the process. In that same paragraph, the Examiner asserts that Figures 2A and

2C have a flowchart that shows the steps of selecting. Item 52 in 2A is marked "CK FOR

SELECTED FUNCTION". Column 4 line 63 of Giardino et al. describes step S2 (which

corresponds to item 52) as checking for selection of operational functions and have nothing to do

with the torque measurement or fastener tightness calculation. Figure 2C makes no reference to

any selection. The Examiner goes on in the next paragraph to state that Column 4 lines 63-67 of

Giardino et al. discloses a processor performing a function according to (an) operational input

command. Indeed, that is what processors do. It is of no relevance, however, to the claims of

the instant application.

Accordingly, Appellants submit that Giardino et al. is not capable of selecting one

expression from a set of mathematical expressions and evidence has been provided to show

otherwise.

III   A Prima Facie Case of Obviousness Has Not Been Established

As outlined above and in Appellants' Appeal Brief, Giardino et al. fails to teach all of the

limitations of the claimed invention, particularly the step of fitting an equation that approximates

the time-amplitude waveform of the torque pulse by selecting one mathematical expression from

a set of mathematical expressions. In support of the §103(a), the Examiner again asserts the

conclusory statement that Giardino et al. does select one mathematical expression from a set of

mathematical expressions. The Examiner also suggests that there are three possible reasons to

combine references. Appellants note, however, that the Examiner did not combined references

as Giardino et al. is the sole reference cited against the claimed invention. Moreover, the Examiner provided neither a reason why one skilled in the art would modify Giardino et al. nor how one skilled in the art would modify Giardino et al. to meet the claimed invention.

Therefore, Appellants submit that a prima facie case of obviousness has not been established.

For all of the reasons set forth above and in the Appeal Brief, the Appellants respectfully urge reversal of all grounds of rejection of claims 1-26.

The Commissioner is hereby authorized to charge any shortage of fees due or any overpayment of fees to BLANK ROME Deposit Account No. 23-2185 (119508-00102).

Respectfully submitted,

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